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Integrative contact lens Web-CT module

Abstract

The purpose of this thesis was to gain added exposure to RGP fittings, interpreting corneal topographies, ordering special parameter RGP's and filming the respective fitting characteristics. Ultimately, the film footage was to be incorporated into an interactive web learning module as an adjunct to Pacific University College of Optometry's second year Contact Lens course. Unfortunately, we encountered many problems transferring the large amount of video data as film footage to our web page. Many adjustments had to be made. RGP scanned photographs were used instead.

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Jennifer Smythe

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INTEGRATIVE CONTACT LENS WEB-CT MODULE

By

Joanna Barnett, BS

Lara Hustana, BS

Sharon Wu, BS

A thesis submitted to the faculty of the
College of Optometry
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Forest Grove, Oregon
For the degree of
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May 2000

Advisors:

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Pat Caroline, COT FAAO

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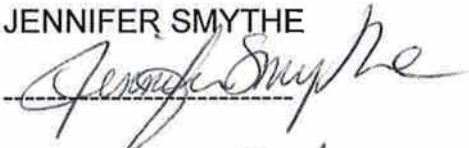


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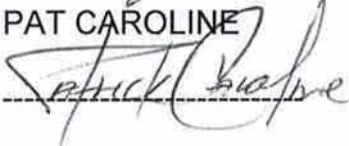


ADVISORS:

JENNIFER SMYTHE



PAT CAROLINE



BIOGRAPHY

Joanna Barnett is originally from Hamilton, Ontario Canada. She began her undergraduate degree in Columbus Ohio at the Ohio State University. While pursuing a degree in Biology she met her husband James Barnett. After getting married the couple moved to Portland, Oregon to complete their degrees. As an undergraduate student of Pacific University, Joanna had many hobbies such as aerobics, walking, and cooking. In 1996 Joanna began Optometry School at Pacific University, and in 1997 she received her bachelors degree in visual science. In 1998 while still attending optometry school, Joanna gave birth to a 6lbs 15oz baby girl named Alyssa Marina. While earning her optometric degree Joanna was an active member of the Student Optometric Association, the Contact Lens Club, Optometric Extension Program, and the Fellowship of Christian Optometrists. Today she is completing her internship in optometry and is actively involved in the children's ministries and the food ministries at her local church. In the spring, Joanna will graduate with an optometric degree and James will graduate with a degree in nursing. The couple plan to move back east to raise their family and begin their careers.

Lara Hustana was born and raised in Southern California. She attended high school in Mission Viejo, CA and then went to the University of California at San Diego where she received her bachelor's degree in neuropsychology with a French literature minor. While remaining on the west coast, she attended Pacific University College of Optometry which she will graduate from in May of 2000. Eventually, she plans to return to the San Diego area to practice optometry.

Sharon Wu is originally from Vancouver, BC. She attended the University of British Columbia for three years where she studied Pharmaceutical Sciences. After enrolling at Pacific University, she received her Bachelor of Visual Science degree. She plans to earn her Doctor of Optometry degree and return to Vancouver to work in private practice.

ABSTRACT

The purpose of this thesis was to gain added exposure to RGP fittings, interpreting corneal topographies, ordering special parameter RGP's and filming the respective fitting characteristics. Ultimately, the film footage was to be incorporated into an interactive web learning module as an adjunct to Pacific University College of Optometry's second year Contact Lens course. Unfortunately, we encountered many problems transferring the large amount of video data as film footage to our web page. Many adjustments had to be made. RGP scanned photographs were used instead.

ACKNOWLEDGMENTS

We would like to extend our gratitude to all those that gave their time in helping us complete our thesis. Our utmost thanks go out to our subjects for their participation and to Pat Caroline and Dr. Jennifer Smythe for their guidance and technical skills. We would also like to graciously thank PARAGON for the generous donation to help compensate our subjects for their time.

Patients were obtained from optometry student classroom sign-in sheets. Students were to sign up only if they fell into one of our refractive error categories (spherical, 1 D WTR, 1D ATR etc). Participants were compensated fifty dollars for their time. We took topographic corneal maps of all candidates who signed up. From the topographies we verified corneal astigmatism. We used a fluorescein pattern simulator to select and order the "ideal" lens (all of which were on K fits for our project). The proposed lens had to have an adequate horizontal fulcrum and unobstructed vertical movement. We also ordered lenses that were 0.50D and 1.00D flatter and steeper than K. that Paragon Optical and Valley Contax graciously sponsored the RGP lenses so we could build a trial fitting set. Next, we interviewed each participant to assess their present contact lens history, measured their horizontal iris diameters and completed a slit lamp evaluation of both of their corneas. The two best fitting candidates were chosen per group.

The next step was to videotape the lens fit and movement. We first recorded the patient's identification and lens parameters to allow easy identification while watching the video later. The lenses were inserted and allowed to equilibrate on the eye for about ten to fifteen minutes. We then filmed each candidate wearing a spherical lens ON K, 0.50 D FTK, 1.00D FTK, 0.50D STK and finally 1.00 D STK lens. This particular order was chosen in attempt to minimize the possibility of minor corneal trauma. We evaluated the fit of each lens via Pacific University's contact lens coding system. We watched for appropriate fluorescein pattern in primary gaze with and without lid interaction, and lens movement in different positions of gaze. Some minor complications were also recorded, including corneal and conjunctival abrasions, and mild reactions to the anaesthetic (0.5% proparacaine).

We met with the audio visual specialist to place the video tapings on a zipdisk. Ten seconds of each video taping was recording on the disk, and then was compressed from 10MB to 1MB for server readability. Once compressed we realized 1MB was not large enough to show accurate movement and fluorescein pattern of the contact lenses. We then concluded that video shots were not possible for viewing on a web CT. Upon consultation with our advisors and computer specialists we decided to place still shots on the web CT instead. Three still shots (on K, 1.00D FTK, 1.00D STK), were scanned on a computer and then placed on a zip disk. The photo shots once attempted, were failed to be placed on the web CT, due to the large number of pixels per shot. Upon minor alterations the photos were successfully placed on our web page for student viewing.

The following information can be obtained on web CT.
Patient LY - Spherical Cornea

- 25 YOAF, currently wearing SCL:

OD: Acuvues 8.8	-3.50 sph	VA: 20120
OS: Acuvues 8.8	-3.50 sph	VA: 20120
- Keratometry: OD 45.00 @ 90 144.87 @ 180

- HVID: OD 11 mm
 - Shape factor: 0.07
 - Meds: Oral contraceptives
 - SLE: anterior seg unremarkable
- CL Hx: SCLs removed immediately prior to topographical mapping and video taping
- Fitting comments:

- On K: 45.00 BC, 9.5mm diameter
Interpalpebral (S), vertically centered (3),
horizontally centered (C), apical alignment (PO),
optimal edge pattern (EO)

As seen on the first picture is a well-fitting RGP on a spherical cornea, with good vertical movement, 3-9 bite, and adequate apical clearance.

- 1D FTK: 44.00 BC, 9.5 diam
Interpalpebral (S), vertically centered (3),
horizontally centered (C), significant apical
bearing (P--), very wide edge pattern (E--)

A typical fluorescein pattern for a flat-fitting RGP is seen in this picture, with excessive lens movement, apical bearing, and loss of 3-9 bite.

- 1D STK: 46.00 BC, 9.5 diam
Interpalpebral (S), vertically centered (3),
horizontally centered (C), significant apical
pooling P++), very narrow edge pattern (E++)

A typical fluorescein pattern for a steep-fitting RGP is seen in this picture. There is minimal lens movement with excessive apical clearance and a tight 3-9 bite.

After viewing the following information students are instructed to complete a quiz

APPENDIX

Patient: Yee, Lena

PACIFIC UNIVERSITY **Axial Map**

47.5

47.0

46.5

46.0

45.5

45.0

44.5

44.0

43.5

43.0

42.5

42.0

Power: 45.2D

Radius: 7.47mm

From vertex:

Distance 0.00 mm

S-merid 0°

From pupil:

Distance 0.18 mm

S-merid 270°

Simulated Keratometer:

45.00D (7.50 mm) @90

44.87D (7.52 mm) @180

Astigmatism: 0.13D

CIM: 0.55

Shape Factor: 0.07

Dioptr

AutoSize

Options

Pupil Size: 3.31 mm

OD

01/13/99

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